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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,055	09/08/2003	Kevin R. Curtis	495812004700	5511

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EXAMINER


CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/658,055	Applicant(s) CURTIS ET AL. 	
	Examiner Audrey Y. Chang	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25, 27-43, 45 and 47-120 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-8, 10-11, 15-16, 22-24, 28, 30, 35, 40, 42, 43, 53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 5,6,9,12-14,17-21,25,27,29,31-34,36-39,41,45,47-52 and 54-120.

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on August 8, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 4, 7-9, (claim 9 being non-elected claim), 24, 30, 35, and 43 and has canceled claims 26, 44 and 46.
- Claims **5-6, 9, 12-14, 17-21, 25, 27, 29, 31-34, 36-39, 41, 45, 47-52 and 54-120** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 3, 2005.
- Claims 1-4, 7-8, 10-11, 15-16, 22-24, 28, 30, 35, 40, 42-43 and 53 remain pending in this application.

Claim Objections

1. **Claims 1-4, 7-8, 10-11, 15-16, 22-23, 28, 30, 35, 40, 42-44, and 53 are objected to because of the following informalities:**

(1). The phrase "the *recorded* data pages" recited in claims 2 and 3 are confusing and indefinites since it lacks proper antecedent basis from their *amended* based claim. It is not clear what is considered to be the "*recorded*" data pages. Is this referred to the data pages recorded as *holograms in the holographic storage medium* or the data pages **in the data mask**? For the examination purpose, this phrase is being examined as the "recorded data pages as **holograms in the holographic storage medium**". *Clarifications however are required.*

(2). The phrase "an image of the information layer is propagated to a plane" recited in **amended** claim 4 is confusing and wrong, since an image is only *formed* at the image forming plane and cannot be

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“propagated through space”. Only light can be propagated through space. This phrase perhaps is better being stated as “the *modulated beam* bearing the information in the data mask is propagated to a plane” or “an image of the information layer is formed at a plane”.

(3). **Claim 7 has been amended** to include the phrase “an image plane of the modulated beam” that is confusing and indefinite since a light beam does not have an image plane. An image plane is *only* defined *with respect* to an *image forming optical element* not a light beam.

(4). The phrase “read only memory” recited in claim 22 is confusing since the based claim explicitly claims a “recording process” for the holographic storage medium, and it is hardly “read only”.

(5). The phrase “the data mask includes multiple information layers” recited in claim 28 is confusing and in contradiction to its based claim which states only one single information layer is in the data mask. Please clarify the structural and logical relationships between the “information layer” in claim 24 and the “multiple information layers” in claim 28 to make the scopes of the claim clear.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 3, 7, 10, 11, 23, 24, 30, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Snyder et al (PN. 6,064,586).**

Claims 1, 24, and 30 have been significantly amended that necessitates the new grounds of rejections.

Snyder et al teaches a method and a system for recording holograms in a holographic storage medium that is comprised of the step of illuminating a *spatial light modulator* (66, Figure 6, and column 7, lines 37-54), serves as the *data mask*, with a light beam (60) to produce a *modulated beam*, the step of propagating a reference beam (62) toward a holographic storage medium (70), and the step of recoding an interference pattern between the modulated beam, (from the data mask), and the *reference beam* (62) in the *holographic storage medium*, (please see Figure 6) as the holograms. Snyder et al teaches that the spatial light modulator has an *information layer* that is divided up into a *plurality of data storage sectors (16) serving as the plurality of the data pages*, (please see Figure 1, and column 4), such that each data storage sectors comprises a plurality of data pixels, (12).

With regard to claim 3, the information of the data sectors recorded in the holographic storage medium are spatially overlapped.

With regard to claim 7, the holographic recording medium has to be close to the image plane of the optical arrangement for making the recording possible.

With regard claims 10-11 and 23, the holographic recording medium (70) is a *rectangular card* and implicitly is a disc.

With regard to claim 24, the spatial light modulator (66) serves as the *data mask* with an information layer having a plurality of data pages wherein each data page comprises a plurality of *pixels*, (please see Figures 1-2 and column 4), as described above.

With regard to claim 30, **Snyder et al** teaches the holographic recording system having a *light source* (50, Figure 6) and a *spatial light modulator* (66) having a plurality of data pages serves as the data mask for relaying an information layer to a holographic recording medium.

With regard to claim 35, Snyder et al teaches that an optical element (63) is used to relay the image displayed on the data mask to the holographic storage medium.

This reference has therefore anticipated the claims.

4. **Claims 1, 3, 7, 10, 11, 23, 24, 30, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Gusest et al (PN. 4,318,581).**

Claims 1, 24, and 30 have been significantly amended that necessitates the new grounds of rejections.

Guest et al teaches a method and a system for recording holograms in a holographic storage medium that is comprised of the step of illuminating a *page composer* (20, Figures 1-5, , and columns 4-6), serves as the *data mask*, with a light beam (36) to produce a *modulated beam* , the step of propagating a reference beam (38) toward a holographic storage medium (24), and the step of recoding an interference pattern between the modulated beam, (from the data mask), and the *reference beam* (62) in the *holographic storage medium*, (please see Figures 1-5) as the holograms. **Guest et al** teaches that the page composer (20) has an *information layer* that is divided up into a *plurality of data arrays* (42a-42f, Figure 2) *serving as the plurality of the data pages*, (please see Figure 1, and column 4), such that each data pages comprises a plurality of pixels, (46, please see column 4, line 43 to column 5 line 23).

With regard to claim 3, the information of the data pages recorded in the holographic storage medium are spatially overlapped.

With regard to claim 7, the holographic recording medium has to be close to the image plane of the optical arrangement for making the recording possible.

With regard claims 10-11 and 23, the holographic recording medium (24) is a *rectangular* card and implicitly is a disc.

With regard to claim 24, the page composer (20) serves as the *data mask* with an information layer having a plurality of data pages (42a to 42f, Figure 2) wherein each data page comprises a plurality of *pixels*, (46, please see Figure 2), as described above.

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With regard to claim 30, **Snyder et al** teaches the holographic recording system having a *light source* (10, Figure 1) and a *page composer* (20) having a plurality of data pages serves as the data mask for relaying an information layer to a holographic recording medium.

With regard to claim 35, Guest et al teaches that an optical element (22) is used to relay the image displayed on the data mask to the holographic storage medium.

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2, 4, 22, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Snyder et al.**

The method and system for recording holograms in a holographic storage medium taught by Snyder et al as described for claims 1 and 24 above has met all the limitations of the claims.

With regard to claim 2, this reference does not teach explicitly that the recorded data pages are separated by 1 micron to 10 mm. However this feature is either inherently met by the disclosure of Snyder et al or an obvious modification to one skilled in the art to design the recorded holograms be arranged with a desired separation for the benefit of making recorded holograms not interfering with each other.

With regard to claim 4, Snyder et al does not teach explicitly that the image of the information layer is propagated to a plane located outside of the holographic storage medium. However such

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modification would have been obvious to one skilled in the art to make the data recorded in the storage medium not interfering with each other.

With regard to claim 22, the feature concerning “read only” holographic storage medium is confusing since the medium is used explicitly for recording hologram. This feature therefore cannot be really examined.

With regard to claim 28, Snyder et al does not teach *explicitly* that the spatial light modulator have a multiple information layers, however it is within general skill of worker in the art to provide multiple information layers in the spatial light modulator to allow multiple information being recorded in the storage medium.

7. Claims 2, 4, 22, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Guest et al.

The method and system for recording holograms in a holographic storage medium taught by Snyder et al as described for claims 1 and 24 above has met all the limitations of the claims.

With regard to claim 2, this reference does not teach explicitly that the recorded data pages are separated by 1 micron to 10 mm. However this feature is either inherently met by the disclosure of Guest et al or an obvious modification to one skilled in the art to design the recorded holograms be arranged with a desired separation for the benefit of making recorded holograms not interfering with each other.

With regard to claim 4, Guest et al does not teach explicitly that the image of the information layer is propagated to a plane located outside of the holographic storage medium. However such modification would have been obvious to one skilled in the art to make the data recorded in the storage medium not interfering with each other.

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With regard to claim 22, the feature concerning “read only” holographic storage medium is confusing since the medium is used explicitly for recording hologram. This feature therefore cannot be really examined.

With regard to claim 28, Guest et al does not teach *explicitly* that the spatial light modulator have a multiple information layers, however it is within general skill of worker in the art to provide multiple information layers in the spatial light modulator to allow multiple information being recorded in the storage medium.

8. Claims 1, 8, 15, 16, 30, 43, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hart (PN.5,592,313) in view of the patent issued to Scherer et al (PN. 5,258,860).

Claims 1, 30 and 43 have been significantly amended that necessitates the new grounds of rejections.

Hart teaches a method and system for recording hologram on a holographic storage medium that is comprised of the *step of illuminating a master hologram* (H1, Figure 9), serves as the *holographic master data mask* to reconstruct a stored information layer onto a *holographic storage medium*, (H2) with an *object beam* (806), therefore creating modulated beam (806), wherein the master hologram (H1) includes a *holographic storage material*. The method further comprises the step of propagating a *reference beam* (852) to the holographic storage medium (H2) to record an interference pattern between the reference beam and the modulated beam, which therefore record a hologram containing the information layer, (please see Figure 9 and column 24). With regard to claim 53, a holographic recorded medium (H2) is created by the recording method.

This reference has met all the limitations of the claims. **Claims 1, 30 and 43 have been amended** to include the feature that the holographic master data mask comprises a layer of data divided

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into a multiple data pages such that each of the data page comprises a *plurality of pixels*. It is implicitly true that the division of a layer of data into a plurality of pages can be arbitrary done by simply dividing the holographic master data mask into multiple data sections each representing a data page as desired. This reference however does not teach explicitly that the holographic master data mask comprises a *plurality of pixels*. **Schehrer** et al in the same field of endeavor teaches that an optically addressed spatial light modulator (OASLM) which implicitly includes a *plurality of pixels* can be used to record holographic data, (please see column 5, lines 34-37). It would then have been obvious to one skilled in the art to apply the teachings of Schehrer et al to use an optically addressed spatial modulator as the means for storing the master holographic information layer and serves as the holographic master data mask for the benefit of providing the data intended to be recorded with better accuracy and clarity, (pixels nature of the display gives the benefit of clarity and good resolution) and providing the means for easily changing and providing different layers of information intended to be recorded.

Response to Arguments

9. Applicant's arguments with respect to amended claims have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments are mainly drawn to newly amended features. They have been fully considered and addressed in the paragraphs above.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing

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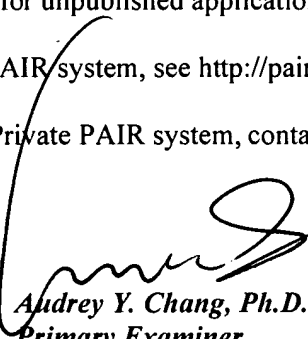
date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.